

What is claimed is:

- 1 1. A semiconductor processing module comprising:
2 a housing adapted to enclose a semiconductor wafer;
3 an ultraviolet radiation source disposed within the housing; and
4 a treatment medium disposed within the housing.
- 1 2. The module of claim 1, wherein the ultraviolet radiation source comprises an
2 ultraviolet lamp.
- 1 3. The module of claim 1, wherein the treatment medium comprises ambient air.
- 1 4. The module of claim 1, wherein the treatment medium comprises oxygen.
- 1 5. The module of claim 1, wherein the treatment medium comprises ozone.
- 1 6. The module of claim 1, further comprising a medium supply system disposed within
2 the housing.
- 1 7. The module of claim 6, wherein the medium supply system comprises a gas inlet.
- 1 8. The module of claim 6, wherein the medium supply system comprises an ozone
2 generator.

1 9. The module of claim 1, further comprising a medium conditioning system disposed
2 within the housing.

1 10. The module of claim 9, further comprising a medium supply system disposed within
2 the medium conditioning system.

1 11. The module of claim 9, wherein the medium conditioning system is adapted to induce
2 a partial vacuum within the housing.

1 12. The module of claim 9, wherein the treatment medium is a vacuum induced by the
2 medium conditioning system.

1 13. The module of claim 9, wherein the medium conditioning system comprises a
2 filtration system.

1 14. A method of removing contaminants from a semiconductor substrate, comprising the
2 steps of:

- 3 providing a housing adapted to enclose a semiconductor substrate;
- 4 providing an ultraviolet radiation source disposed within the housing;
- 5 providing a treatment medium disposed within the housing;
- 6 enclosing a semiconductor substrate within the housing;
- 7 exposing the semiconductor substrate to the treatment medium; and

8 utilizing the ultraviolet radiation source to expose the semiconductor substrate to
9 ultraviolet radiation.

1 15. The method of claim 14, wherein the step of providing an ultraviolet radiation source
2 further comprises providing an ultraviolet lamp.

1 16. The method of claim 14, wherein the step of providing a treatment medium further
2 comprises providing ambient air.

1 17. The method of claim 16, wherein the step of providing a treatment medium further
2 comprises providing ambient air in a partial vacuum.

1 18. The method of claim 14, wherein the step of providing a treatment medium further
2 comprises providing a vacuum.

1 19. The method of claim 14, wherein the step of providing a treatment medium further
2 comprises providing a treatment medium comprising mostly oxygen.

1 20. The method of claim 19, wherein the step of providing a treatment medium further
2 comprises providing a treatment medium comprising mostly oxygen in a partial vacuum.

1 21. The method of claim 14, wherein the step of providing a treatment medium further
2 comprises providing a treatment medium comprising ozone.

1 22. The method of claim 21, wherein the step of providing a treatment medium
2 comprising ozone further comprises providing an ozone generator to supply ozone within the
3 housing.

1 23. The method of claim 21, wherein the step of providing a treatment medium further
2 comprises providing a treatment medium comprising ozone in a partial vacuum.

1 24. The method of claim 14, further comprising the step of growing a layer of oxide on
2 the surface of the substrate.

1 25. The method of claim 24, wherein the step of growing a layer of oxide further
2 comprises controlling oxide growth by adjusting time and intensity of the ultraviolet
3 radiation exposure.

1 26. The method of claim 24, wherein the step of growing a layer of oxide further
2 comprises controlling oxide growth by adjusting composition of the treatment medium.

1 27. A system for remediating organic contaminants from a copper seed layer deposited on
2 an upper surface of a semiconductor wafer, the system comprising:

3 a housing adapted to receive and enclose the semiconductor wafer;

4 an ultraviolet radiation source disposed within the housing and adapted to expose the
5 semiconductor wafer to ultraviolet radiation;

6 an ozone generator adapted to supply ozone into the housing as a treatment medium
7 for the semiconductor wafer; and

8 a conditioning system disposed within the housing and adapted to filter contaminants
9 from the ozone.